

CLAIMS

I claim:

1. A method for digital control of electrical consumers in a model railway comprising:

supplying consumers having contact to a track with energy by means of a square wave voltage which is applied to the track and controlling the consumers by modulation of the square wave voltage in accordance with a digital control information;

generating a return signal in a consumer having been supplied with such control information;

interrupting application of the square wave voltage from the track during a predetermined time interval, said consumer applying the return signal within said predetermined time interval to the track being now square wave voltage free; and

detecting the return signal transmitted via the track by means of a sensor connected to the track.

2. The method according to claim 1 wherein interruption of the square wave voltage is effected by disconnecting the track from a controller means which generates the modulated square wave voltage.

3. The method according to claim 1 wherein, during said predetermined time interval in which the square wave voltage is interrupted, a current circuit path for said return signal is provided by connecting disconnected track terminals with one another via a current sensor.

4. The method according to claim 1 wherein said digital control information is transmitted in successive control packets and said predetermined time interval is provided either between two successive control packets or in a portion at the start of a preamble of a control packet.

5. The method according to claim 4, wherein the length of the time interval is adjusted to a multiple of the duration of a 1 bit-period of the control packet and wherein, for adjusting the start of the predetermined time interval, a packet end bit of a control packet is used as time reference.

6. The method according to claim 4, wherein the length of the time interval is adjusted to the three to four fold multiple of the duration of a 1 bit of the control packet and wherein, for adjusting of the start of the predetermined time interval a packet end bit of a control packet is used as time reference.

7. The method according to claim 1 wherein a consumer having been addressed immediately prior to such a determined time interval applies its return signal within this time interval to the track.

8. The method according to claim 1 wherein energy for generating said return signal is drawn from a buffer capacitor provided in the consumer and wherein the return signal generated by the consumer is generated by modulation of a current signal.

9. The method according to claim 1 wherein a bit stream of the return signal detected by the sensor is converted into a signal form manageable as to level and polarity by a UART.

10. The method according to claim 1 wherein said return signal is evaluated by referring to control information having been transmitted prior to the control information via the track.

11. The method according to claim 1 wherein said return signal is evaluated by referring to control information having been transmitted prior to the control information via the track in order to generate an “occupancy” information indicating occupancy of the track by a consumer.

12. A device for digital control of electrical consumers in a model railway comprising:

supply and control means for supplying consumers having contact to a track with energy by means of a square wave voltage which is applied to the track and for controlling the consumers by modulation of said square wave voltage in accordance with a digital control information;

a return signal generator provided in the consumer being supplied with such control information for generating a return signal in response to said control information;

interrupting means interrupting application of the square wave voltage from the track during a predetermined time interval, said consumer applying the return signal within said predetermined time interval to the track being now square wave voltage free; and

a sensor connected to the track for detecting the return signal transmitted via the track.

13. The device according to claim 12 wherein said interrupting means is provided between said supply and control unit and said track and wherein track terminal connecting means are provided for connecting track terminals separated from said supply and control unit via a current sensor.

14. The device according to claim 13 wherein evaluation means are provided which receives said modulated square wave voltage from said supply and controller unit and evaluating said digital control information for generating a control signal for said interrupting means such as to initiate and terminate said predetermined time interval, and wherein said evaluation means generates a control signal for said track terminal connecting means.

15. The device according to claims 12 wherein in said consumer, detecting and control means are provided which are connected to said return signal generator and which determine based on the digital control information transmitted via the track the start of the predetermined time interval and trigger said return signal generator to apply the return signal to the track.

16. The device according to claims 12 wherein said return signal generator comprises a power source powered by a buffer capacitor provided in said consumer.